



**U.S. Department of Transportation**  
**Federal Aviation Administration**  
**Standard**

PREPARATION OF TEST AND EVALUATION DOCUMENTATION



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1. SCOPE

1.1 Scope. This standard establishes the minimum requirements for the content and format of Federal Aviation Administration (FAA) Master Test Plans (**MTP**), Test and Evaluation (**T&E**) Plans, Test Procedures, and Test Verification Requirements Traceability Matrices (**TVRTM**) written support of the National Airspace system (**NAS**) by, or for, the FAA.

1.2 Purpose. The purpose of this standard is to establish uniform instructions for the preparation of all Test Plans, Test Procedures, **MTPs**, and Test **VRTMs**.

1.3 Classification. T&E documentation prepared under this standard are classified as follows:

- a. **MTPs**;
- b. T&E plans;
- c. System, subsystem, and unit test procedures;
- d. TVRTMs.

2. APPLICABLE DOCUMENTS

This section is not applicable to this standard.

3. REQUIREMENTS

3.1 Master Test Plans. **MTPs** shall be prepared in accordance with Appendix 1.

3.2 Test and Evaluation Plans. T&E plans shall be prepared in accordance with Appendix II.

3.3 Test Procedures. System, subsystem, and unit test procedures shall be prepared **in** accordance with Appendix **III**.

3.4 Test Verification Requirements Traceability Matrixes. TVRTMs shall be prepared **in** accordance with Appendix IV.

4. QUALITY ASSURANCE PROVISIONS

This section **is** not applicable to this standard.

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5. PREPARATION FOR **DELIVERY**

This section is not applicable to this standard.

6. NOTES

6.1 Acronyms and abbreviations.

<b>C</b>	Critical
CDRL	Contract Data Requirements List
co	Concept
D	Demonstration
DE	Design
<b>DT&amp;E</b>	Development Test and Evaluation
DV	Development
FA	Factory
FAA	Federal Aviation Administration
FAC	FAA Facility
IT&E	Integration Test and Evaluation
KDP-2	Key Decision Point-Two
KS	Key Site
MTP	Master Test Plan
<b>N</b>	Non-Critical
NA	Not Applicable
NAS	National Airspace System
<b>OT&amp;E</b>	Operational Test and Evaluation
PAT&E	Production Test and Evaluation
PD	Production
SLTCE	System Level Test and Evaluation
SOP	Standard Operating Procedures
STD	Standard
ST&E	Shakedown Test and Evaluation
<b>I</b>	Test
TC	FAA Technical Center
T&E	Test and Evaluation
TVRTM	Test Verification Requirements Traceability Matrix
X	Not Applicable

6.2 Tailoring. Project Managers are to be aware that the inclusion of FAA-STD-024 in a contract list of applicable specifications and standards must be accompanied by specific delineation of the required Contractor Master Test Plan, Test and Evaluation Plans, Test Procedures, and the **TVRTMs** in the delivery schedule of Contract Data Requirements Lists (**CDRL**). Care should also be taken to address and clarify any inconsistent terminology among the documentation that comprises the procurement package.



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## APPENDIX I

### 10. STANDARD PROCEDURE FOR DEVELOPMENT OF FAA MASTER TEST PLANS

#### 10.1 SCOPE

10.1.1 Scope. This appendix defines the minimum requirements for the content of the FAA **MTP**.

10.1.2. Purpose. The purpose of this appendix is to establish uniform instructions for the content and format of the **MTP**.

#### 10.2 APPLICABLE TESTS

**10.2.1** The MTP shall include the following:

- a. Project level test and evaluation (**T&E**);
- b. System level T&E;
- c. Operational T&E.

#### 10.3 MASTER TEST PLAN

10.3.1 MTP. The MTP shall be 3 broad plan which relates test objectives to required-&stem characteristics and critical issues, and integrates objectives, responsibilities, resources, and schedules for T&E to be accomplished. The **MTP** shall be detailed only to the extent necessary to show the rationale for the kind, amount, and schedules of the testing planned. **It** shall relate the T&E effort clearly to technical risks; operational issues and concepts; system performance; reliability, availability, maintainability and logistic requirements; and major decision points. The MTP will explain the relationship of subsystem tests, integrated system development tests, and Initial operational tests which, when analyzed in combination, provide confidence in the system's readiness to proceed into the next acquisition phase or into fully capable service. The MTP must address the T&E to be accomplished in the appropriate program phase. MTP shall address software components of FAA systems as well as hardware components. If more detail for internal use is required, the MTP may be supplemented with appendices. The following format shall be adhered to:

10.3.1.1 Purpose. This paragraph shall state the purpose of the MTP. The purpose shall be stated in terms of relating test objectives to required system characteristics and critical issues; integrating objectives, responsibilities, resources and schedules for the T&E effort; providing a rationale for the kind, amount, and schedules of the testing planned; and establishing confidence in the system's readiness to proceed into the next acquisition phase or into fully capable service.

10.3.1.2 Reference documents. Reference documents are those upon which the MTP is based, or which relate significantly to it. Only documents meeting these criteria, and appearing in the body of the text, shall be listed.

10.3.1.3 Description.

10.3.1.3.1 Mission. This paragraph should relate directly to the planned system operational concept. Summarize the operational need, and planned operational environment.

10.3.1.3.2 System. Briefly describe the system and how it works, to include:

a. Key functions of the system that permit it to accomplish the operational need. Include, if **practical**, a mission/function matrix relating the primary functional capabilities that must be demonstrated by testing to the mission(s) to be performed and concept(s) of operation;

b. Interfaces with other systems that are required to accomplish the mission;

c. Unique characteristics of the system that make it different, or better than presently deployed or alternative systems, or that lead to special test requirements.

10.3.1.3.3 Required Operational Characteristics. List the key operational effectiveness and suitability characteristics, goals, and thresholds.

10.3.1.3.4 Required Technical Characteristics. List the key technical characteristics, performance goals, and thresholds. Clearly define how these characteristics, particularly in the areas of reliability, availability, and maintainability will be tested. Indicate the program milestones at which the thresholds will be or have been demonstrated. It is a multi-organizational or International program, highlight any characteristics resulting from this circumstance. Prior to key decision point two (**KDP-2**), while tradeoffs of characteristics are underway, if may not be possible to establish firm goals or thresholds. In this case, those aspects of performance which are critical to the ability of the system to accomplish its mission should be identified.

10.3.1.3.5 Critical T&E Issues.

a. Technical Issues. Briefly describe key areas of technological or engineering risk that must be addressed by testing in any test phase or test level ;

b. Operational Issues. Briefly describe key operational effectiveness or suitability issues that must be addressed by testing in any test phase or test level.

#### 10.3.1.4 Program Summary.

**10.3.1.3.1 Management.** Outline the program and T&E management responsibilities of participating organizations. Highlight arrangements between participants of test data sharing, responsibilities for test management decision, and management interfaces for multi-organizational T&E efforts.

**10.3.1.4.2 Integrated Schedule.** Display on one page (a foldout, if necessary), the integrated time sequencing of T&E events for the entire program and related key events in the acquisition process.

**10.3.1.4.3 Test Plans.** Provide a list contemplated Test Plans to be developed for the entire program, the organization responsible for providing the plan, and the expected delivery date of the plan. For each test plan list the general nature of the measurements which are to be taken and the type of outcome in the measurements which shall be considered successful and state whether the measurements will be evaluated in comparison to a predetermined level or by comparative test with the system/subsystem to be replaced.

**10.3.1.5 DT&E/PAT&E.** Discuss all T&E in sufficient detail so that test objectives are related to the system operational concept and are clearly identified for Development Test and Evaluation (DT&E) and Production Test and Evaluation (PAT&E). Relate the planned testing to the critical technical issues. The near-term portion of the plan should contain the most detail; the long-range portion should be as specific as possible. The following information should be included.

**10.3.1.5.1 DT&E/PAT&E to Date,** Provide a summary of the DT&E/PAT&E already conducted based on the best available information. This paragraph should set the stage for discussion of planned DT&E/PAT&E. Briefly describe prototype articles with emphases on how they differ from the planned production articles. Emphasize DT&E/PAT&E events and results related to required performance characteristics, critical issues, and requirements levied by earlier decisions. Highlight technical characteristics or specification requirements that were demonstrated (or failed to be demonstrated). When simulations are a key part of the DT&E/PAT&E effort, describe how the simulations are determined to be successful.

**10.3.1.5.2 Future DT&E/PAT&E.** Discuss all remaining DT&E/PAT&E planned, beginning with the date of the current MTP revision. Address separately each remaining phase of DT&E/PAT&E, including the following for each phase:

a. DT&E/PAT&E Objectives. Summarize the specific **DT&E/PAT&E** objectives to be addressed. The objectives identified should be the discrete major goals of the **DT&E/PAT&E** effort, which, when achieved, will provide solutions to critical technical issues and demonstrate that the engineering effort is progressing satisfactorily. Broad, general objectives, such as "demonstrate that the design and development process is complete,\*\* are of no value. If decision memorandum requires demonstration of specific technical characteristics in a given phase, identify those characteristics.

b. DT&E/PAT&E Events/Scope of Testing/Basic Scenarios. Summarize the key **DT&E/PAT&E** events planned to address the objectives. In addition, describe in sufficient detail the scope of testing and **basic** test scenarios so that the relationship between the testing and the objectives, and the amount and thoroughness of testing, are clearly apparent. Include subsystem tests and simulations when they are key elements in determining whether or not objectives will be achieved. Discuss **reliability** availability, and maintainability testing.

10.3.1.5.3 Critical DT&E/PAT&E Items. Identify as critical those items which must be available for the conduct of adequate testing. If appropriate, display these critical items on the Integrated schedule.

10.3.1.6 OT&E/ST&E Outline. Discuss all planned Operational Test and Evaluation/Shakedown Test and Evaluation (**OT&E/ST&E**) from the earliest initial **OT&E** through the final **ST&E** in similar format and detail as that describe in the **DT&E** outline (paragraph 10.3.1.5). In the **OT&E/ST&E** to Date **section**, which sets the stage for discussion of the planned **OT&E/ST&E**, relate the test conditions and results to **the** operational effectiveness and suitability, as appropriate, of the systems being acquired. In this section and **in Future OT&E/ST&E**, be sure to discuss the degree to which the test environment, including procedures, is representative of the expected operational environment. Also discuss the reliability testing concept, and the training and background of operational test personnel. In **OT&E/ST&E** objectives, present the major objectives that, when achieved, will establish the operational effectiveness and suitability of the system. Either present the objectives in terms of, **or** relate the objectives to, the system's operational effectiveness and suitability. In **OT&E/ST&E** Events/Scope of Testing/Basic Scenarios, relate the testing to be performed **to** the **OT&E/ST&E** objectives, **or** give measures which shall be used to compare the new and old outcomes **that** will be considered to satisfy the **objectives**). When development/production and operational/shakedown testing **are** combined, portion8 of **paragraphs** 10.3.1.5 and 10.3.1.6 may be combined, 8s appropriate.

10.3.1.7 NAS IT&E/SLT&E. Describe the NAS Integration Test and Evaluation/System Level Test and Evaluation (**IT&E/SLT&E**) needed to demonstrate **that** item8 procured fulfill the requirements using **8** similar format and **detail** a8 described in paragraph 10.3.1.5. In the NAS **IT&E/SLT&E** to Date section, which sets the stage for **discussion** of the planned NAS **IT&E/SLT&E**, relate the test condition and results to the system level performance; and operational

effectiveness and suitability, as appropriate, of the system being acquired. In this section and in Future NAS **IT&E/SLT&E** be sure to discuss the degree to which the test environment, including procedures and measurement techniques employed, is representative of the expected operational environment. In the **NAS IT&E/SLT&E Objectives**, present the major objectives that, when achieved, will establish operational/technical performance of the system. Present the objectives in terms of, or relate the objectives to, the systems functional performance and operational effectiveness/suitability. In the NAS **IT&E/SLT&E/Events/Scope of Testing/Basic Scenarios** relate the testing to be performed to the NAS **IT&E/SLT&E** objectives or give measures which shall be used to compare the new and old systems (for instance, specify test outcomes that satisfy the objectives).

**10.3.1.8 Special Resource Summary.** Provide a summary of the key resources for **DT&E/PAT&E**, **OT&E/SLT&E**, and **NAS IT&E/SLT&E** that are unique to the program.

**10.3.1.8.1 Test Articles.** Identify the actual number of articles, including key support equipments, of the system required for testing in each phase and for each major type of T&E (**DT&E/PAT&E**, **OT&E/ST&E**, **NAS IT&E/SLT&E**). If key subsystems (components, assemblies, or subassemblies) are to be tested individually, identify each such subsystem and the quantity required. Specifically identify prototypes, pilot production, and production models.

**10.3.1.8.2 Special Support Requirements** (instrumentation, aircraft, simulators, test sites, and facilities). Identify the special support resources required for T&E, and briefly describe the steps being taken to acquire them.

## APPENDIX II

### 20. STANDARD PROCEDURE FOR DEVELOPMENT OF TEST AND EVALUATION PUNS

#### 20.1 SCOPE

20.1.1 This appendix is applicable to:

a. Development test and evaluation/production acceptance test and evaluation (**DT&E/PAT&E**) plans;

b. **NAS** integration test and evaluation/system level test and evaluation (**NAS INTE/SLT&E**) plans;

c. Operational test and evaluation/shakedown test and evaluation (**OT&E/ST&E**) plans.

#### 20.2 TEST PLAN CONTENT

20.2.1 Test Plan. Test Plans shall be used to ensure that the system, subsystem, and/or unit meet **the minimum acceptable** performance requirements of the associated specification, the system level requirements and the OTCE requirements, and their supporting documentation. Test Plans **as a minimum** should include a project level (**DT&E/PAT&E**) Test Plan, a **system level** Test Plan (**NAS IT&E/SLT&E**), and an Operational **Test and Evaluation** Plan (**OT&E/ST&E**). The Test Plan shall Include the following Information:

20.2.1.2 Purpose. This paragraph shall state the purpose of the Test Plan as it relates to T&E requirements. The purpose shall be stated in terms of establishing detailed testing requirements, criteria, **general** methods, responsibilities , and overall planning.

20.2.1.2 Reference documents. Reference documents are those upon which the Test Plan is based, or which relate significantly to the Test Plan. Only documents meeting these criteria , and **appearing** in the **body** of the text, shall be listed.

20.2.1.3 T&E Philosophy. This paragraph shall contain background information required to substantiate the T&E philosophy and facilitate the understanding of-the Test Plan. The philosophy-shall **indicate** why and how the Test Plan will ensure verification of performance requirements. The **T&E** philosophy shall:

a. Ensure early detection of marginal design, fabrication, or component part defects;

b. Verify that the design yields mandated specification performance;

c. Verify system/subsystem/unit capability to survive the handling, transportation, installation, and operational environment;

d. Establish a basis for the acceptance, certification, and cut-Over (transition) of the unit/subsystem/system;

e. Verify the system/subsystem/unit capability to properly interface and function with associated equipment;

f. Minimize risks associated with proceeding toward the next project milestone;

g. Ensure that operationally effective and suitable systems are implemented into the NAS.

#### 20.2.1.4 T&E approach and concept.

This section shall define the T&E approach and concept. It shall define what categories and series of tests or other validation exercises shall be run in order to verify that the test requirements will be met. For example, the T&E of a representative system could have the following test categories:

- a. hardware diagnostics;
- b. Peripheral diagnostics;
- c. Basic system operations;
- d. Support software and maintenance;
- e. Security;
- f. Startover and switchover;
- g. Reconfiguration;
- h. Element certification;
- i. Service certification;
- j. **Interactive** operations.

Test series are defined **by** the test manager and are logical groupings of requirements to be tested usually under a single test configuration within a specified time period.

Critical test requirements are requirements that the test manager identifies as being **associated** with a critical T&E issue (see Appendix I, section



**10.3.1.3.5).** These critical test requirements **shall be** identified in the Test Plan and associated with each test category and test series. Critical test requirements are also designated in the project level, system level, and **OT&E Test Verification Requirements Traceability Matrixes (TVRTM)** (see Appendix IV, paragraph **40.5.6**). Remaining test requirements are designated as non-critical. **For** each test category and **test series** list the nature of the measurements which shall be taken and the type of outcome in the measurements which shall be considered successful. For each test category and test series state whether the measurements will be evaluated in comparison to a predetermined level or by comparative test with the system/subsystem being replaced.

**20.2.1.5 T&E program flow diagram.** The T&E program flow diagram shall graphically display the activities of the entire Test Plan **in** the form of a top-level flow diagram. The diagram shall include the categories of tests to be performed, test locations, any supporting, or subordinate diagrams.

**20.2.1.6 Organization roles and responsibilities.** This paragraph shall describe the roles and responsibilities of the contractor departments, the FAA, and/or other contractual organizations that are involved in the T&E activities. A description of the functions of personnel with special assignments, i.e., Test Director, Test Conductor, etc., shall be included. Organization **charts** of project test groups and any special test team arrangement, if applicable, shall also be included.

**20.2.1.7.1 Documentation requirements and control.** This paragraph shall identify the documentation and control required to conduct the verification program.

**20.2.1.7.1 General.** This paragraph shall identify graphically through use of a verification document tree the plans and procedures required to implement the test program and resulting test reports. The verification document tree shall include at a minimum the following:

- a. Test requirements (project, system level, and operational test and evaluation);
- b. Test Plans (project, system level, and operational test and evaluation);
- c. Test procedures (project, system level, and operational test and evaluation);
- d. Test reports (project, system level, and operational test and evaluation).

These documents shall be graphically represented in descending hierarchy. The purpose and scope of each document or document group shall be included. Three test levels must be addressed: project level, system level, and operational test and evaluation.

20.2.1.7.2 Operating and control documents. This paragraph shall describe the type of test procedures, i.e., control procedures, hardware/test procedures, standard operating procedures (SOP); their purpose and how they shall be prepared and controlled. Document standards used to prepare the test procedures, shall be referenced in this paragraph. Included in this paragraph will be configuration control, discrepancy reports, and test reports (periodic and final). A definition of the purpose shall be included for each of the above.

20.2.1.8 Training. The training paragraph shall identify the kinds of certification and training required for personnel involved in the T&E program. If a program training plan is required, this paragraph shall reference the document, and the verification document tree shall show the training plan.

20.2.1.9 Test support requirements. Depending on the support required, this paragraph may be included with the test description. It is defined here to establish the content of support requirements.

20.2.1.9.1 Instrumentation. This paragraph shall list special test equipment, support software and/or equipment requiring long lead time to procure.

20.2.1.9.2 Data analysis. This paragraph shall identify the criteria which shall be used to determine the degree of success of the test and shall include: a description of the data, when and where it will be made available for review/analysis, who will be responsible for providing the data, performing the analysis, and reporting the results. If special forms or formats are to be used to present the data, the forms will be describe here.

20.2.1.9.3 Test configuration. This paragraph shall identify the facilities where the T&E activity is to take place (contractor and Government facilities) including the modification level to which the facility shall be configured. Required configuration of the test item shall also be included.

20.2.1.20 Reviews and reports. This paragraph shall describe the program and technical test reviews that require support from the organizations involved in the T&E activities. It shall also describe the purpose of the activity and information that test organizations are required to provide.

20.2.1.11 Schedules. This paragraph shall describe the types of schedules to be used to plan and status test activities, including their purpose, scope and frequency of updating.

20.2.1.12 Test Verification Requirements Traceability Matrix (TVRTM). For each Test Plan a TVRTM shall be included - Appendix IV describes the TVRTM.

APPENDIX 111

30. STANDARDPROCEDUREFOR SYSTEM,SUBSYSTEM,  
MD UNIT TEST PROCEDURES

30.1 SCOPE

30.1.1 Scope. This appendix defines the minimum requirements for the content of system, subsystem, and unit test procedurea. **These** requirements include:

- a. Caption;
- b. Test location and schedule;
- c. Test objectives;
- d. Manning and responsibilities;
- e. Test support hardware and software;
- f. Test operation **instructions**;
- g. **Test** data reduction and **analysis**;

30.1.2 Purpose. This appendix **establishes the** minimum requirements for the content of test procedures.

30.2.1 General. For each test, test procedures **shall be** prepared containing the Information described below. For a test program Involving a series of tests, the test procedures for individual **tests may be issued** as volumes or appendices to a basic document containing information applicable to the series as a whole. In such cases, redundant information **shall be minimized** by specific cross-reference between the **basic** document **and its** individual volumes or appendices.

**30.2.1.1** Caption. The test procedure shall have a caption containing:

- a. A unique test identification of **the** individual **test** including the test series and test category;
- b. The requirement to which the tert applies, identified by number and approved nomenclature;
- c. The primary function of the contract/specification item (or portion thereof) to be **tested**.

**30.2.1.2 Location and schedule.** The location and schedule for all events related to the testing shall be identified. Schedule information may be presented in relation to other program events (e.g., two days before start of test or one day after test completion). Information on the following test efforts shall be presented:

- a. Briefings;
- b. Tests;
- c. Debriefing;
- d. Data reduction/analysis.

**30.2.1.3 References.** Applicable reference documents shall be listed. Such references shall include, but not be limited to:

- a. Test requirements;
- b. Test plans;
- c. Test design and data analysis plan;
- d. handbooks and/or user documents for all test support equipment and software.

**30.2.1.4 Test objectives.** Detailed test objectives shall be presented by brief descriptions and referenced to the test categories, test series, critical tests, and applicable paragraphs of the Test Plan.

**30.2.1.5 Manning and responsibilities.** Personnel requirements shall be identified for test conduct and support, including test data reduction/analysis. Special knowledge or skill requirements shall be stated. Personnel requirements identical to those stated **in** the contract Item Test Plan shall be specified by reference to the Test Plan.

**30.2.1.6 Test support hardware and software.** Test hardware and software support requirements shall be specified. A detailed description and/or drawing shall be included for the test configuration to be utilized for the verification. Requirements identical to those stated in the Test Plan shall be specified by reference to the Test Plan.

**30.2.1.7 Test operation instructions.** Detailed step-by-step instructions shall be provided for the test set-up, conduct, termination, and restart. The following items shall be included:

**30.2.1.7.1 Test set-up.** Block diagram<sup>8</sup> and text shall be used to identify the test configuration. This information shall include all connection points, test points, and controls. Supplementary descriptive Information shall be

furnished on any special test equipment or **fixtures** to be utilized Including drawings, operations theory, **and analysis of measurement** accuracy. Pretest check out procedures (to ensure proper **test configuration**, switch settings operation of supporting hardware and **software, and** procedural checks of equipment calibration certification) **shall be included.**

**30.2.1.7.2 Test conduct.** A detailed step-by-atep set of instructions for the conduct of the test shall be provided. These **descriptions** shall include: all test **actions**, sequence of actions, and the proper **responses** to the actions. Test events shall be described in the order **in** which they **are** planned to occur with the dependency of **any one event on another ao indicated.** Data collection forms to **be** used for manual **recording of test** results **shall** be provided in the sequence to be used in the test. Test **responses/outputs** with specified allowable tolerance8 **shall** be indicated. These **descriptiona** shall be included for test support **hardware/software as well as** the item under test.

**30.2.1.7.3 Termination and reatart of test.** Test procedure8 shall be written in small, logical **units of work to facilitate resumption** of testing after scheduled or unscheduled interruptions with a **minimum** of reconfiguration. This requirement shall be applied to the extent **practical** without causing negative technical or economic Impact on the **test.** **Procedures shall be** specified for normal and unscheduled termination of the test as well as the restart of the test to insure that the **necessary** test output data are obtained and made available for required **analysis.**

**30.2.1.7.4 Safety considerations.** This paragraph of the **test** procedure shall address and **provide a compilation** of unique **hazards anticipated to be** encountered during **test.** These hazard8 **encompass** three **distinct** areas:

- a. hazard8 to test team **personnel;**
- b. hazard8 to equipment under teat;
- c. Hazards to **associated** equipment in real-time or standby **use modes .**

Procedures to be followed, personal limits, protective equipment to be used, authorities to be prenotified, etc., shall be **specified** for each of the three areas of concern. A responsible test team member (**safety officer**) with authority to terminate testing shall be identified **for each** test.

**30.2.1.8 Test data reduction and analysis.** The requirement8 and procedures **for the reduction** and analysis of test data **shall** be provided. The following **information shall be included:**

**30.2.1.8.1 Recording and reduction requirements.** Data to be recorded during the test, manually and/or automatically, shall be specified. **In addition,** requirements for **format** and content of the data **resulting** from the

**reduction/analysis** process Shall be specified. Requirement6 for data recording and reduction shall be specified in manner and detail 60 the resulting Information will clearly indicate whether the test objective6 have been met.

30.2.1.8.2 Test design and data reduction/analysis procedures. The procedure6 to be used in test design and in reducing and **analyzing test** data shall be provided. These procedure6 may be provided by references, and exception6 to the documentation listed in the reference paragraph6 of the test procedure. **Reduction/analysis** to be accomplished by use of a computerized system shall be provided by direct text or references to the appropriate user documentation containing Step-by-Step Instructions on how to initialize, maintain operation after initialization, terminate, and restart the system.

30.2.1.8.3 Test Verification Requirement6 Traceability Matrix (TVRTM). All TVRTM test requirements associated with a **given** test procedure shall be identified in the test procedure. All test results shall be related to the associated test requirements. Appendix IV describes the TVKTM. For each test procedure a Test VRTM shall be included.

APPENDIX IV

40. STANDARD **PROCEDURE** FOR DEVELOPMENT OF TEST  
VERIFICATION **REQUIREMENTS** TRACEABILITY MATRIXES

40.1 Test Verification Requirements Traceability Matrix (TVRTM Format.  
**TVRTMs** shall conform as closely as practical with the generic TVKTM format  
presented in Figure 1.

40.2 **TVRTM** Titles. Each **TVRTM** shall have a title which identifies the  
system/subsystem and level of test (project level/system level/Operational  
Test and Evaluation (**OT&E**) level).

40.3 TVRTM Legend. A legend identifying each abbreviation and acronym used  
in the TVRTM shall be included with the **TVRTM**.

40.4 Verification methods, test phases, test levels, and test locations.  
Verification methods, test phases, test levels, and test locations shall be  
selected from the following:

40.4.1 Methods. Verification methods used in the TVRTM shall be labeled with  
the designated acronym and selected from the following:

- a. Test (**T**);
- b. Demonstration (**D**);
- c. Not Applicable (**NA**);

40.4.2 Test Phases. Verification phases used in the TVKTM shall be marked  
with an X in the applicable column and selected from the following:

- a. Development Test and Evaluation/Production Test and Evaluation  
(**DT&E/PAT&E**);
- b. Operation Test and Evaluation/Shakedown Test and Evaluation  
(**OT&E/ST&E**);

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Requirements document title and paragraph number and requirements statement	Test Phases	Test Levels			Test Locations	Criticality	Cross Reference	Remarks
		Project	Operational	System				
CO DE/DV/PPD DT&E PA&E TOT&E								

Figure 1. Generic Test Verification Requirements Traceability Matrix (TVRTM)



c. NAS Integration Test and Evaluation/System Level Test and Evaluation (**NAS IT&E/SLT&E**).

40.4.4 Test Locations. Locations used in the TVRTM shall be labeled with the applicable verification method acronym (**reference** paragraph **40.4.1**) and placed under one of the following:

- a. Factory (**FA**);
- b. FAA Technical Center (**TC**);
- c. Key Site (**KS**);
- d. FAA Facility (**FAC**).

40.5 TVRTM Content. TVRTM content shall be tailored to the verification activities being conducted. TVRTM content shall basically conform with the following requirements:

**40.5.1 Requirement document title, paragraph number, and requirements statement column.** This column shall state the title of the requirements document in which the requirement **is** resident, the paragraph number of the requirement, and a statement of the requirement.

40.5.2 Test Phases Column. This column shall identify the phase, or phases, at which the particular requirement is to be verified.

40.5.3 Test Level Column. This column shall identify the level or levels, at which the particular requirement **is** to be verified.

40.5.4 Test Location Column. This column shall identify the location, or locations, at which the particular requirement **is** to be verified.

40.5.5 Critically Column. This column shall identify a particular Item as critical (**C**), or non-critical (**N**).

40.5.6 Cross Reference Column. A cross reference column shall be provided which **references** applicable documents **containing** the applicable paragraph number of the requirement, the Test Plan, the test procedure, and section 4.0 of the project specification.

40.5.7 Remarks Column. This column shall be used to make appropriate remarks, notes, etc.

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August 17, 1987

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